Unexplained behaviour in the White-striped Mastiff-bat *Tadarida australis*

Murray Ellis

RZS Mammal Section, P.O. Box 20, Mosman NSW 2088

In September 1992 a fauna survey was conducted at Nocoleche Nature Reserve (29°51′S, 144°8′ W), between Bourke and Tibooburra by the Royal Zoological Society Mammal Section (Fig. 1). The loud calls of bats were heard, and spotlighting and trapping revealed the presence of the White-striped Mastiff-bat *Tadarida australis* in the vicinity of the camp. The black and white ventral pattern, wing outline and audible call allowed a definite identification to be made. The area that the bats were flying over was at the junction of the eucalypt woodlands associated with the Paroo River floodplain and the shrublands of the slightly higher surrounding country.

During the first two nights a strange clapping sound was heard in association with the calls of this species. Spotlighting eventually showed, on three occasions, two bats flying directly towards each other and colliding in mid-air, producing the clapping sound. The short, sharp sound indicated that a collision occurred, rather than a manoeuvre where the bats avoided each other by quick turns past each other. Such turns should produce a rippling sound rather than the single clap. The actual details of the collision could not be determined since the bats were between 20 and 50 m away and flying rapidly, and a 50 W broad beam spotlight was being used. They either hit front on and rebounded away from each other, or passed by each other hitting wings. Given the rapidity of their flight after the collision, and the little loss of altitude, I suspect that each bat continued on its original course once contact was made. After further spotlighting, the bats dispersed from the vicinity of the camp and no further observations were made.

The likely explanation for this behaviour is either accidental collisions, territorial displays or courtship displays. If the first option is correct then simple chance is sufficient explanation of the observed behaviour. General reviews of bat biology (Hill and Smith 1983; Fenton 1984; Robertson 1990) show that little is known about either of the latter facets of a bat's life. Territorial behaviour has been described within roosting caves and around feeding sites. This involves either fluttering displays, or one bat chasing another, but neither action matches the behaviour at Nocoleche. Descriptions of mating activity concentrate on cave-based activity, or lekking by a flying-fox species, but the range of mating strategies is far wider (see McWilliam 1987). The work of Kitchener and Hudson (1982) on reproduction in this species support the possibility that this behaviour is a mating related display. They found that *T. australis* is monoestrous with the mating period commencing in late August. Since births were distributed over an eight week period then it is likely that the mating period would be of similar duration. Hence it is possible that mating, and associated courtship displays, could occur in September.

With improvements in radio-tracking and night-vision equipment, this and many other mysteries about the large free-flying bats will be resolved, and these isolated snippets of information will form into comprehensive biological stories.

ACKNOWLEDGEMENTS

I would like to thank Peter Wilson and Harry Parnaby for interesting conversions over the possible meaning of the observations, and an anonymous referee for further useful comments.

REFERENCES

FENTON, M. B., 1983. *Just bats.* University of Toronto Press: Toronto.

HILL, J. E. AND SMITH, J. D., 1984. *Bats, a natural history.* British Museum: London.

KITCHENER, D. J. AND HUDSON, C. J., 1982. Reproduction in the Female White-striped Mastiff Bat, *Tadarida australis* (Gray) (Molossidae). *Aust. J. Zool.* **30:** 1–14.

MCWILLIAM, A. N., 1987. In *Recent Advances in the Study of Bats* ed by M. B. Fenton, P. Racey and J. M. Rayner. Cambridge University Press: Cambridge.

ROBERTSON, J., 1990. *The complete bat.* Chatto and Windus: London.

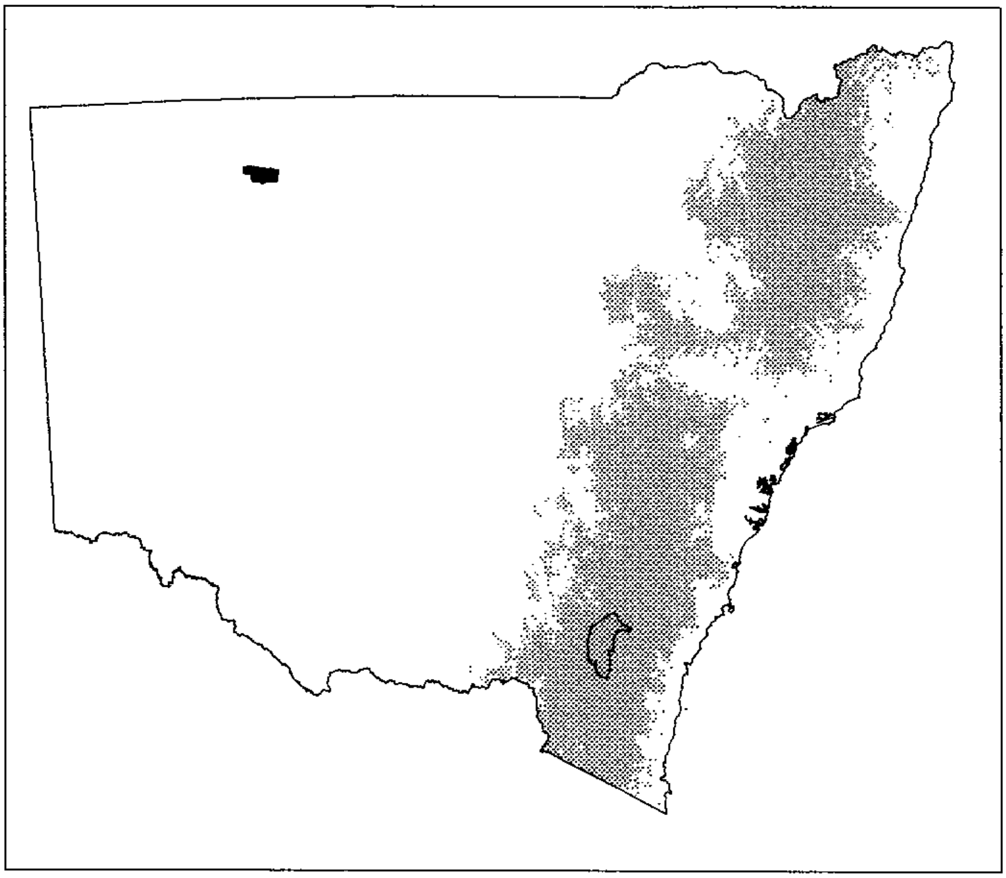

Fig. 1. The location of Nocoleche Nature Reserve (black) on the northwestern plains of New South Wales. The Great Dividing Range is shown in stippling.